LECTURE 1: DEVALUATION & THE TRADE BALANCE

- **Primary question:**

Under what circumstances does devaluation improve the trade balance (*TB*)?

- **Secondary question:** If the currency floats

(i.e., no foreign exchange intervention by the central bank), how much must the exchange rate (*E*) change to clear *TB* by itself (i.e., if no offsetting capital flows)?

Model: Elasticities Approach

Key derivation: Marshall-Lerner Condition

GOODS MARKET PRICING IN OPEN-ECONOMY MODELS: OVERVIEW OF ALTERNATIVE ASSUMPTIONS IN API120

(1) Traditional Two-good Models (X & M)

(1a) *Producer Currency Pricing* :

Keynesian special case --

Supply of each good is infinitely elastic in short run =>

P is fixed in terms of its own currency:

$$P = \overline{P}\ , \qquad P^* = \overline{P^*}\ .$$

+ Full and instantaneous pass-through =>

domestic price of import given by EP^*,

where E = exchange rate (domestic units /foreign)

and P^* = foreign price of good produced there.

Key relative price is foreign goods vs. domestic: $EP^*/P = E\overline{P^*}/\overline{P}$.

GOODS MARKET PRICING IN OPEN-ECONOMY MODELS: ALTERNATIVE ASSUMPTIONS (continued)

(1b) Local Currency Pricing special case :

No passthrough --

Price of importable good in domestic market
is fixed in terms of domestic currency, in short run.

(1c) Pricing To Market :

Partial passthrough --

Importers engage in price discrimination
(even in long run), depending on elasticity
of substitution vs. local competing goods.

GOODS MARKET PRICING IN OPEN-ECONOMY MODELS: ALTERNATIVE ASSUMPTIONS (continued)

(2) Small Open Economy Models:

All tradable goods prices are determined on world markets.

(2a) ***Frictionless neo-classical model*** (or equilibrium model):

All goods are tradable.

Thus overall domestic price level is given: $P = EP^*$

(2b) ***NTG or Salter-Swan model***:

There exists 2nd class of goods,
non-traded (internationally): NTGs.

Key relative price is now the relative price of NTGs vs. TGs.

We interrupt this lecture for an announcement…

Expectations for Classroom Behavior

Be on time.

Bring your name card.

No side conversations.

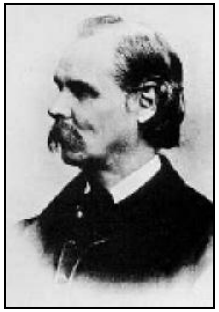
Eat responsibly.

Leave class for emergencies only.

No electronics in class unless specifically permitted.

Cell phones off.

The Marshall-Lerner Condition:



Under what conditions
does devaluation improve the trade balance?

- We can express the trade balance either in terms of foreign currency: *TB*,*
  - e.g., if we are interested in determining the net supply of foreign exchange in the fx market (balance of payments)
- Or in terms of domestic currency: *TB*
  - e.g., if we are interested in net exports as a component of *GDP ≡ C+I+G+(TB).*
- We will focus on *TB** here, and on *TB* in Prob. Set 1.

How the Exchange Rate, *E*, Influences BoP

ASSUMPTIONS :		
1) No capital flows or transfers => BoP = *TB*	$\Rightarrow$ Supply of fx determined by EXPORT earnings	$\Rightarrow$ Demand for fx determined by IMPORT spending
2) PCP: Price in terms of producer's currency; Supply elasticity = ∞ .	=> Domestic firms set $\overline{P}$.	& Foreign firms set $\overline{P^*}$.
3) Complete exchange rate passthrough:	Price of *X* in foreign currency = P/E	Price of Imports in domestic currency = $E\ \overline{P^*}$
4) Demand: a decreasing function of price in consumer's currency	=> $X = X_D\ (\overline{P}/E)$.	=> $M = M_D\ (E\ \overline{P})^*$.
=> Net supply of fx = *TB* expressed in foreign currency $\equiv$ *TB**	$= (\overline{P}/E)\ \ \mathbf{X_D}(\overline{P}/E) - (\overline{P^*})\ \mathbf{M_D}(E\,\overline{P^*})$.	

Derivation of the Marshall-Lerner Condition

$$TB^* = (1/E)\ X_D(E) - M_D(E)\ .$$

Differentiate:

$$\frac{dTB^*}{dE} = -\left(\frac{1}{E^2}\right)X + \left(\frac{1}{E}\right)\left(\frac{dX_D}{dE}\right) - \left(\frac{dM_D}{dE}\right)$$

Multiply by E^2/X.

This quantity **>** 0 iff

$$-1 + \left(\frac{E}{X}\right)\left(\frac{dX_D}{dE}\right) - \left(\frac{E^2}{X}\right)\left(\frac{dM_D}{dE}\right) > 0$$

Define elasticities:

$$\varepsilon_X \equiv \left(\frac{dX_D}{dE}\right)\left(\frac{E}{X}\right) \qquad \varepsilon_M \equiv -\left(\frac{dM_D}{dE}\right)\left(\frac{E}{M}\right)$$

The condition becomes:

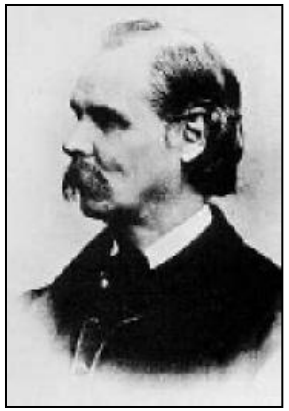
$$-1 + \varepsilon_X + \left(\frac{EM}{X}\right)(\varepsilon_M) > 0\ .$$

$$-1+\varepsilon_X+\left(\frac{EM}{X}\right)(\varepsilon_M)>0$$

Assume for simplicity we start from an initial position of balanced trade: *EM=X.*

Then the inequality reduces to

$$-1+\varepsilon_X+\varepsilon_M>0$$



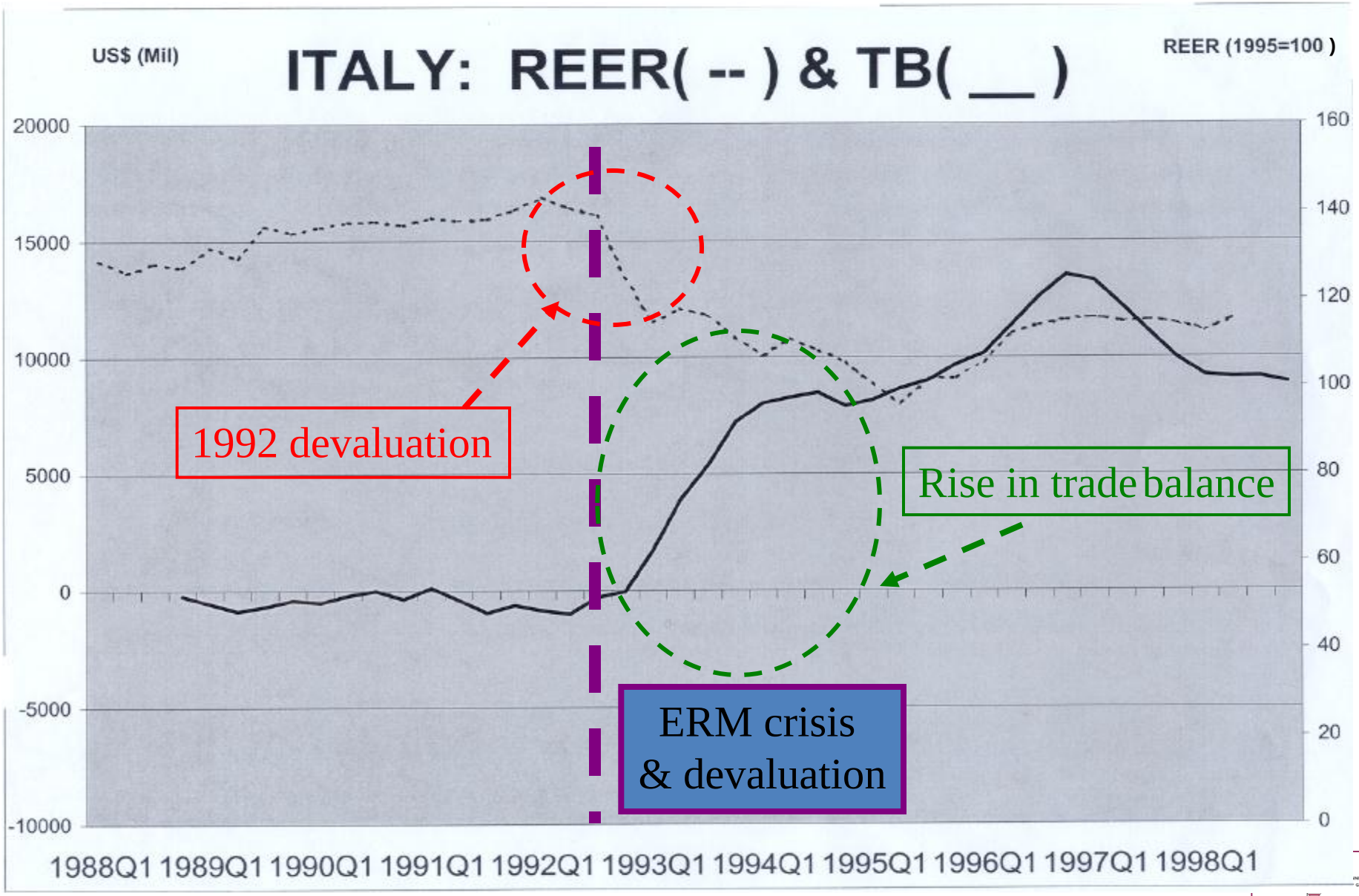
This is the Marshall Lerner condition.

If the initial position is trade deficit (or surplus), then the necessary condition for *dTB*/dE > 0* will be a bit easier (or harder) for the elasticities to meet .

Do devaluations improve the trade balance in practice?

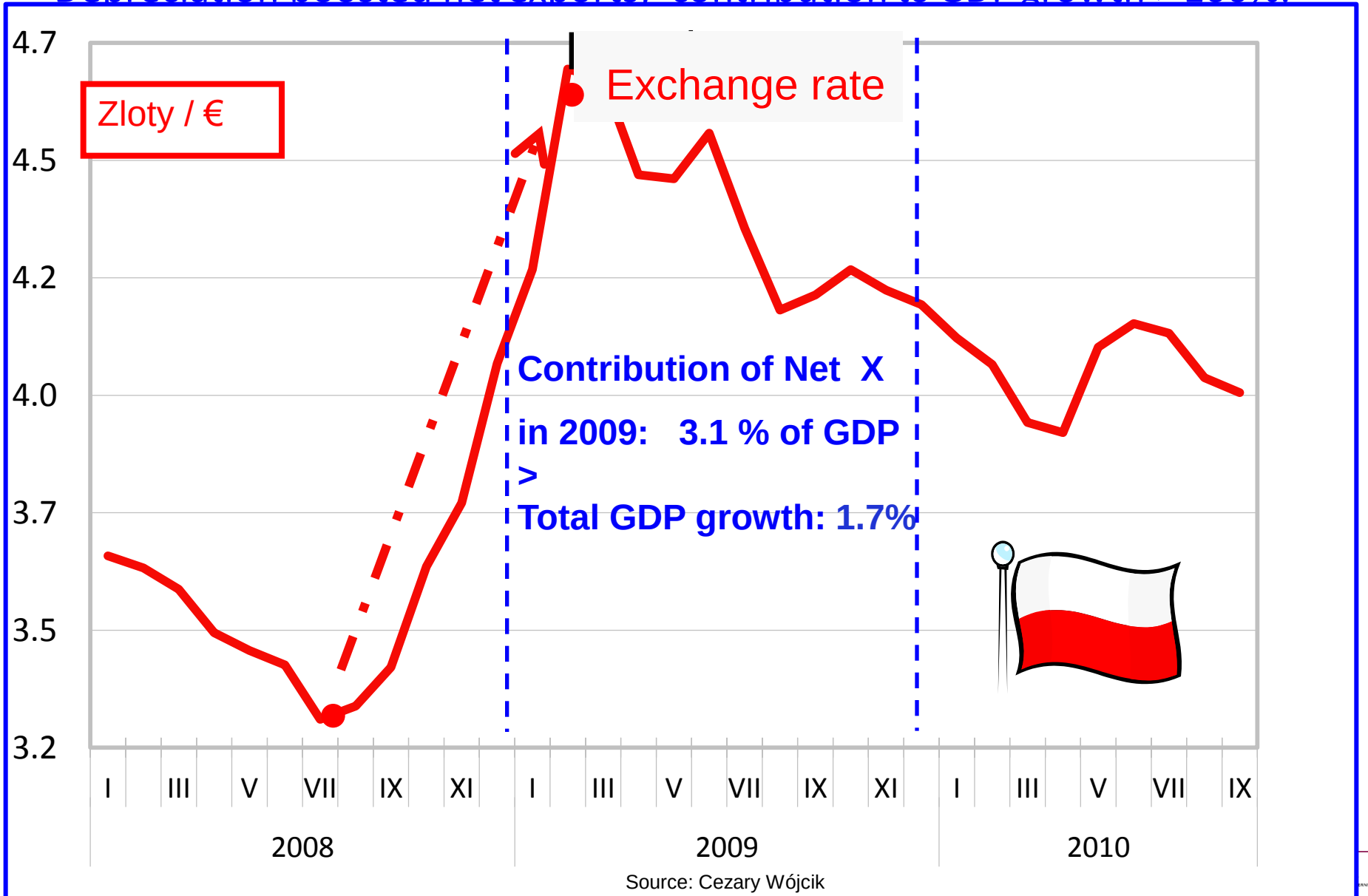
- A few historical examples
  - » Italy 1992-93
  - » Poland 2009
  - » Turkey 2014 (from reading list: A Weakening Currency Could Mean Strength for Turkish Exporters," *NY Times*, Apr. 11, 2014.)
- The J-curve and econometric estimation of elasticities (in Lecture 2)

The effects of Italy's devaluation (in the European ERM crisis of 1992), as measured by its Real Effective Exchange Rate, on the country's Trade Balance.



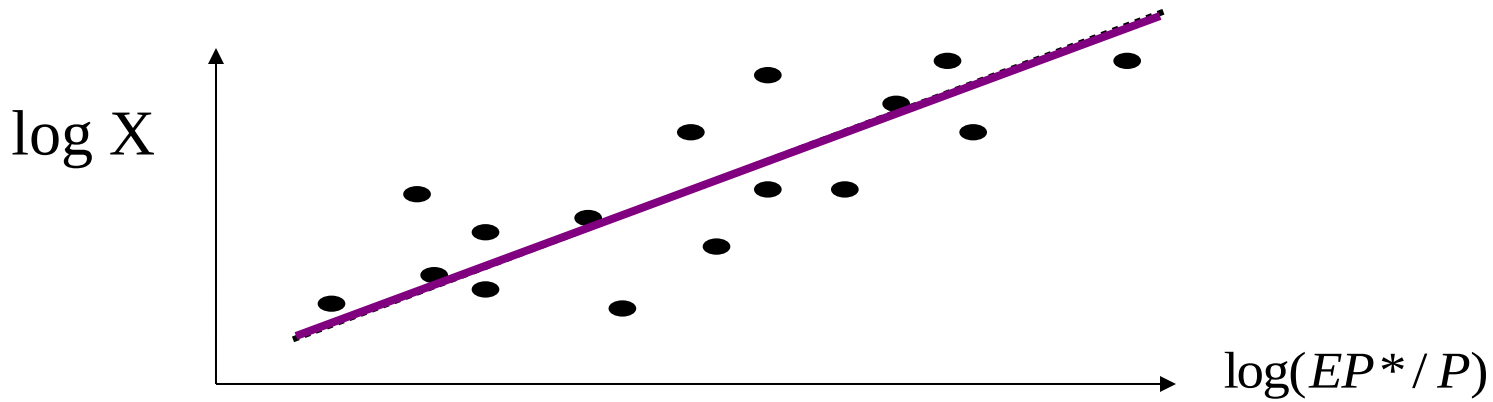
Poland's exchange rate rose 35% when the GFC hit, .

Depreciation boosted net exports: contribution to GDP growth > 100%.



Source: Cezary Wójcik

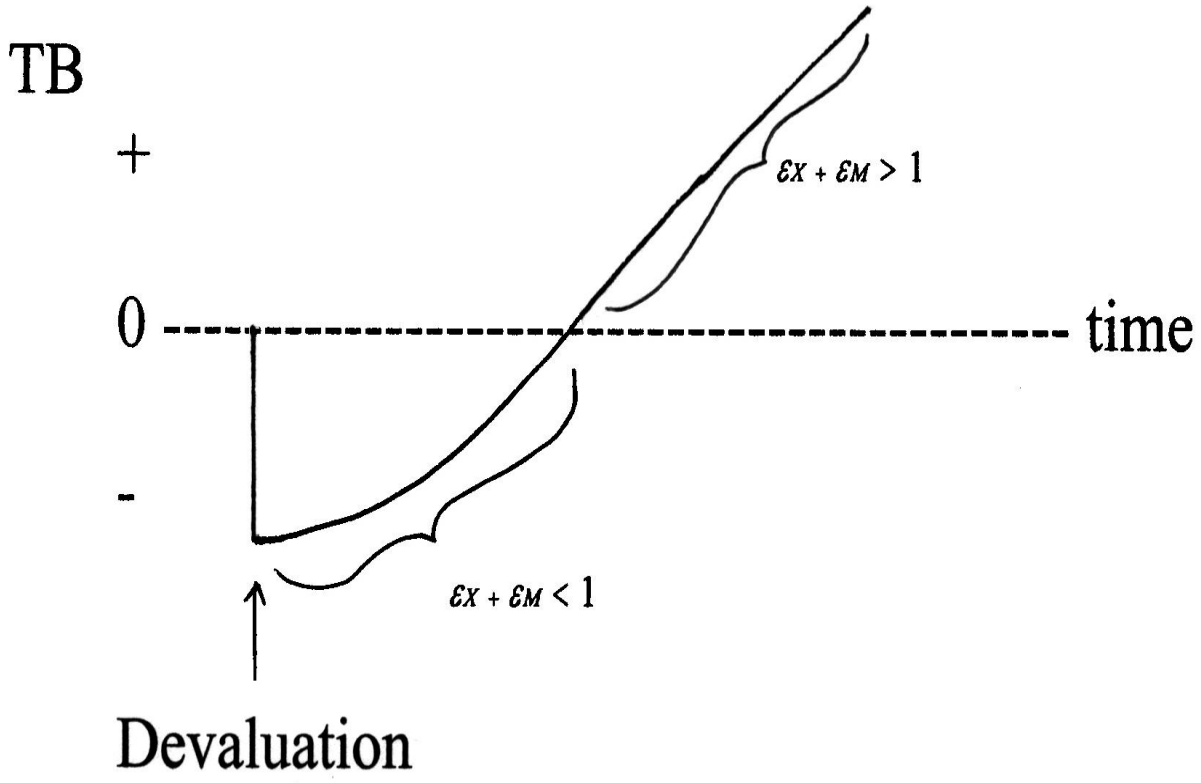
Empirical estimates of sensitivity of exports and imports to *E* & *Y*



- For empirical purposes, we estimate by OLS regression
  - with allowance for lags, giving J-curve;
  - shown in logs, giving parameters as:
    - price elasticities
- Illustration: Marquez (2002) finds for most Asian countries:
  - Marshall-Lerner condition holds, after a couple of years

STYLIZED J-CURVES

With instantaneous pass-through



STYLIZED J-CURVES

With delayed pass-through